CATALOGED
v.106

THE AMERICAN
JOURNAL OF PHARMACY

VOL. 106 JANUARY, 1934 NO. 1

EDITORIALS

"BOOK OF THE MONTH"

DICTIONARIES do not make good reading, although it was out of their warp and woof that Shelley spun his silken sonnets and Shakespeare wove his tapestried tales.

Yet I know a man who finds more fun digging in dictionaries than most people do reading their "Books of the Month." And he is now an expert with words—not ostentatious with his use of the rare and exotic, but fluid in phrase and choice with chiselled language.

Another inhabits his anthologies of abstracts and though apt to quotational incontinence he brings to his circle of friends a remarkable gift of reference.

Catalogues, too, have their devotees—and book catalogues in particular. One would scarcely expect to spend an evening or two, stuck to and struck on, a seemingly arid book list—any more than does the stranger who walks the humid denseness of Buckingham woods in June expect to find orchids. Yet if even the stranger to Buckingham woods has eyes to see and uses them—orchids he *will* find—and gay ones. I have before me as I write, Sotheran's Price Current of Literature—"offered at Nett Prices" by "Henry Sotheran, Ltd.—founded in Little Tower Street City 1816 Booksellers to His Majesty the King" and it is a listing of a great collection of old and new books on "Chemistry—Pure and Applied."

There is more interesting informative material in this little catalogue than in many a tome intended for thorougher reading and as proof of this contention here are a few choice pieces picked with purpose.

LEMMERY (Nicholas, *Apoticaire du Roy; de l'Académie des Sciences*) COURS de CHYMIE,—Septième Édition, reveuë, corrigée & augmentée par l'Autheur, *with fine portrait by*

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C. Vermeulen, and 7 copperplates, 8vo. *contemporary calf gilt (fine copy), with some old marginal notes,* £1. 15s, 1690.

This copy is very interesting from containing on the reverse of one plate a full receipt (in a contemporary handwriting) of Goddard's Drops, which had always been considered a great secret. The ingredients given there vary considerably from those mentioned in *D. N. B.* (article Jonathan Goddard, M. D.), which states that 'Goddard was currently believed to have communicated the secret of the drops to Charles II. for a consideration of £5000.'

Which proves that Jonathan Goddard, M. D., knew well how to trick a king and turn a merry bargain.

HILL (John, *self-styled* 'Sir John', M. D.) REVIEW of the WORKS of the ROYAL SOCIETY of LONDON; containing Animadversions of such of the Papers as deserve particular Observation, first edition, 1751; THOUGHTS concerning GOD and NATURE, in Answer to Lord Bolingbroke's Philosophy, 1755—2 vols. 4to. in 1, *contemporary calf gilt, rebacked* (RARE), £1. 17s 6d, 1751-5.

'Failing to obtain the requisite number of names for his nomination to the Royal Society, he attacked it in several satirical pamphlets, specially vituperating Folkes and Baker, his former patrons, and published *A Review of the Works of the Royal Society,* holding up to ridicule the 'Philosophical Transactions'.—*D. N. B.*

'This once well-known work is, in my judgment, the greatest compliment the Royal Society ever received. . . . Sir John Hill's book is droll and cutting satire.'—*Prof. de Morgan.*

———SECOND EDITION OF THE FIRST WORK, 4to. contemporary *calf (back worn and joints broken),* 17s 6d, *printed for the Hon. Lady Hill,* 1780.

This was not the only tussle 'Sir John' had with the Royal Society. While the tar-water craze was raging, Hill sent a letter to the council of the society, purporting to have been written by a seaman, in which he declared that he had fallen from a mast and broken his leg, which after the application of tar-water had become whole again. While the council was solemnly considering the matter, he sent another letter, saying that he had forgotten to mention that his leg was a wooden one.

Turn to LaWall's great history of Pharmacy and note therein what Bishop Berkeley thought of tar water!

HELMONT (Johannes Baptista van) ŒUVRES, traittant des Principes de Medecine, pour la Guerison assurée des Maladies: de la Traduction de JEAN LE CONTE, Docteur Medecin; *with engraved vignette on title,* 4to. *contemporary calf (back damaged, title stained and mounted, also some corners stained and a few defective, and somewhat browned),* RARE, £2. 2s. *Lyon, chez Jean Antoine Huguettan & Guillaume Barbier,* 1671.

Only edition of the only French translation ever issued. A MS. note by a former owner says: 'Ces ouvrages sont devenus très rares, c'est à peine si on les trouve dans les grandes bibliothèques médicales.'

'He is regarded by some historians of chemistry as the greatest chemist who preceded Lavoisier. He was the first to point out the imperative necessity for employing the balance in chemistry, and by its means showed in many instances the indestructibility of matter in chemical changes. He was the first to coin the word *gas* (derived according to some from the Greek χαος and according to others from the Dutch *geest*), applying it to elastic aeriform fluids. He was also the first to take the melting-point of ice and boiling-point of water as standards for the measurement of temperature.

Thus offering a contradiction to the usual explanation of the origin of the word *gas*. Again consult LaWall's fine volume of history.

HELVETIUS [*Germanice* SCHWEITZER] (Johann Friedrich, M. D. VITULUS AUREUS, quem Mundus adorat & orat in quo tractatur de rarissimo Naturæ Miraculo transmutandi Metalla, nempe quomodo Tota Plumbi substantia vel intra momentum ex quavis minima Lapidis veri Philosophici particula in Aurum obryzum commutata fuerit Hagæ Comitis, editio princeps, *with fine portrait æt.* 36, *and folding plate of the Prague Medal,* 16mo. *old marbied boards* (FINE COPY); very rare, *with bookstamp, and auto. of F. C. Myller, M. D.,* 1677 *on title,* £5. 5s.

Amstelodami, apud Joh. Janonium à Waesberge & viduam Elizei Weyerstraet, 1667.

One of the most important alchemical books, as it contains a (seemingly) very convincing account of a transmutation, which is still believed in by many at the present day. The above first edition is now very rare. Ferguson was only able to give its date, while Bolton only knew the work in reprints in Manget and other alchemical collections.

'Helvetius is now remembered by the present work, in which he gives an account of the transmutation of which he was a witness in 1666 [The title of the German translation says that he himself made the gold]. . . . The book passed through several editions, and the case excited a great deal of discussion. By some it was looked on as conclusive proof of the actuality of transmutation; by others it was considered too puerile for comment. Kopp, however, asks if a man like Helvetius could have narrated such an occurrence either erroneously or untruthfully, and he thinks that it would not be reasonable to assume either. On the strength of this cautious view more energetic believers in the occult have brought it forward at the present moment as historically incontestable.'—*Ferguson.*

"And which is still believed by many at the present day"—How true!! How *very* true!!!

PLINIUS Secundus (Caius) HISTORIÆ NATURALIS, *continued*:—thick vols. 24mo. *contemporary vellum, with morocco labels* (FINE COPY); RARE, £3. 3s. *Lugduni Batav., ex officio Elzeviriana,* 1635.

Fifth edition, with additions, of Dupinet's translation, the best old French version of Pliny, which went through many editions and was praised by Bayle.

Pliny's Natural History is chemically important, for together with Dioscorides [*q. v. ante*] it is the only work that gives an insight into the

chemical knowledge of the ancients. In addition to many metallurgical processes, he mentions one of calico printing, gives the first distinct account of glass-making by the fusion of sand and soda, mentions acetic acid (in the form of wine vinegar), the only acid known to the ancients, and soap (which was introduced to Rome from barbarian Gaul and Germany), of which he distinguishes the soft and hard variety, etc. etc. etc.

Interesting, is it not, to know that soap was one of Cæsar's famous finds—and that Rome, for all its baths and aqueducts, had never known before the Gallic wars the joys of a lively, lathery lavage.

. . . . . .

And though these excerpts from a catalogue may not prove its right to a "Book of the Month" rating, we have at least the satisfaction of knowing that the little book has given us many a pleasant surprise and while we may never achieve to one of its precious tomes we can write and write sincerely "more power to Henry Sotheran, Ltd."

IVOR GRIFFITH.

THE KEEPING PROPERTIES OF LIQUID EXTRACT OF ERGOT (E. M. Smelt, Research Assistant to the Pharmacopœia Commission)—The B. P. method of assay for Liquid Extract of Ergot requires bright sunlight or a mercury vapor lamp and cannot be always used. Allport and Cocking's modification of this assay is found to give identical results and may be conveniently carried out at any time. The rate of deterioration of Liquid Extract of Ergot B. P. 1932 under different conditions of storage has been investigated. At room temperature in partially filled bottles rapid loss of alkaloid takes place. If the liquid extract is kept for more than six weeks under ordinary dispensary conditions, the alkaloidal strength is liable to fall below the minimum permitted by the B. P. When kept at room temperature in filled bottles in the dark, the keeping properties are much improved. The rate of change in liquid extracts kept in completely filled bottles in an ice-chest is very slow. The author expresses appreciation and thanks to Dr. C. H. Hampshire for numerous suggestions and advice.—(*Phar. Jour.*)

SCIENCE MARCHES ON
1933

IN 1846 the British Admiralty issued certain instructions to the Captain of H. M. S. *Rattlesnake*. The great Huxley, "a surgeon who knew something about science" was aboard the vessel at the time. Said the Admiralty to the Captain,—

> "You are to refrain from any act of aggression towards a vessel or settlement of any nation with which we may be at war, as expeditions employed on behalf of discovery and science have always been considered by all civilized communities as acting under a general safeguard."

Thus has it ever been that neither the stir of war nor the desuetude of peace, has obstructed or hindered the forward march of science. And so in 1933. Not all the economic experiments of the year have put the slightest crimp in this important phase of human progress. The New Deal with its naïve dole—the collapse of the "noble experiment" and the beginning of a controlled thirst—the National Recovery Administration with its cascade of codes and the alleged end of the depression—gold and silver gloomy with their new estate and all the world in debt to unborn children—such have been the throes and woes of 1933. But through it all triumphant Science traveled on parade—and here is a record † of the birth, during the long, long year just ended, of Science's *"children of the depression."*

MEDICINE AND PHARMACY

A leading subject of medical research during the year was the pituitary gland; evidence that it produces hormones affecting growth, sexual activity, sugar utilization, milk production, and the thyroid and adrenal glands was presented and extraction of some of these hormones accomplished by investigators at McGill University, the University of California, University of Chicago, and the Rockefeller Institute for Medical Research.

The history of the functioning of an individual's pituitary gland throughout his life with all that tells of the individual's health and physical and mental development can be read in changes in his skull that may be seen in X-ray photographs, Dr. Hector Mortimer of Boston reported.

First known antidote for poisonous bichloride of mercury, formaldehydesulfoxylate, was discovered by Dr. S. M. Rosenthal, U. S. Public Health Service.

Protective "vaccination" against pneumonia similar to smallpox vaccination may be possible as a result of the discovery by Prof. Arthur F. Coca,

†From a copyrighted article by *Science Service*.

Cornell University Medical College, that pneumonia attacks may be warded off by hypodermic injections of the poison produced by the pneumonia germ.

A widespread outbreak of amebic dysentery, traced to food handlers in two Chicago hotels, was reported in the fall; a number of fatalities due to mistaken diagnosis showed that physicians in the North need to be on the watch for this so-called tropical disease.

An epidemic of encephalitis, said to be the worst in the history of the United States, occurred in St. Louis and vicinity in late summer and early fall.

A concerted attack by scientists of the vicinity, of the U. S. Army and U. S. Public Health Service and of various other institutions, including tests on convict volunteers, showed that encephalitis is undoubtedly due to a virus and is not carried by mosquitoes, that the disease can be transmitted to mice and that encephalitis patients develop immune bodies in their blood which give resistance to the disease.

Evidence strongly suggesting that a rabbit tick is the agent that has carried Rocky Mountain spotted fever across the continent was reported by Dr. R. R. Parker, U. S. Public Health Service.

Seventy years was predicted as the expectation of life for future average Americans by Drs. Louis I. Dublin and Alfred J. Lotka, Metropolitan Life Insurance Co.

The causative virus of infantile paralysis travels from the nose to brain in the substance of the olfactory nerve cells whose branches lie exposed on the surface of the nasal mucous membrane, Dr. Simon Flexner, Rockefeller Institute, found.

Mortality from diabetes is increasing throughout the world and in practically all instances the increase is limited to women during and after the menopausal ages, Metropolitan Life Insurance Co. statistical analysis revealed.

One type of arthritis (hypertrophic or degenerative) results from the "wear and tear" of increasing age and from repeated injury to the joints, Drs. G. A. Bennett and Walter Bauer of Harvard Medical School found.

One of the most remarkable feats in surgery was the removal of an entire lung from a three-year-old child suffering from cancer of the lung; the operation performed by Dr. William F. Rienhoff, Jr., Johns Hopkins Hospital, is only the second such ever performed and the first attempted on a child; the child is now well and living normally.

First surgical removal of an entire lung was performed on an adult patient in April by Drs. Evarts A. Graham and J. J. Singer of Washington University Medical School, St. Louis.

Removal of the normal thyroid gland is a new method used by a group of Boston physicians and surgeons for relieving congestive heart failure and angina pectoris.

The severe pain of angina pectoris, heart disease, was relieved in six cases by cutting nerves, Dr. James C. White, Massachusetts General Hospital, reported.

Removal of tumors of the pancreas and of as much as seven-eighths of that organ itself was done by Dr. Evarts A. Graham of St. Louis to relieve a newly-discovered disease just the opposite of diabetes and due to overpro-

duction of insulin and featured by epileptic-like attacks, mental symptoms, excessive hunger and weakness.

From the vital cortex of the adrenal glands Drs. Arthur Grollman and W. M. Firor, Johns Hopkins Medical School, extracted a crystalline substance so potent as to be considered probably the pure hormone.

Evidence that the adrenal cortex has an influence on regulation of salt and water in the body similar to that of insulin on sugar was found by Dr. R. L. Zwemer, Columbia University.

Maintaining the normal volume of circulating blood was declared by Drs. W. W. Swingle, J. J. Pfiffner, and H. M. Vars, P. A. Bott and W. M. Parkins of Princeton University to be the vital function of the adrenal cortex.

Research of Drs. Frank A. Hartman, J. E. Lockwood and K. A. Brownell of the University of Buffalo showed that the adrenal glands appear to be concerned with vitamin utilization and milk production.

Progress in glandular treatment embraced successful treatment of seven cases of growth retardation verging on dwarfism by extract of growth-stimulating hormone of pituitary gland; relief from symptoms of premature old age in five women following removal of sex organs by treatment with theelin; and suggestion that Addison's disease may be treated more efficiently by the new adrenal-stimulating hormone of the pituitary gland instead of by giving adrenal cortex hormone.

Successful treatment of a bacterial disease (gonococcal vaginitis) by theelin, newly-crystallized female sex hormone, was announced by Dr. Robert Lewis of New Haven, Conn.

Victims of myasthenia gravis, a fatal disease characterized by general weakness, have been given new health and strength by two drugs, glycine and ephedrine, it was reported at the Mayo Clinic.

Dinitro-ortho-cresol and dinitrophenol were found to be powerful metabolic stimulants and weight-reducing medicines but several fatalities caused physicians to warn against careless use of dinitrophenol.

A close chemical relation between a female sex hormone, oestrin, and two of the most powerful known cancer-producing substances, two coal-tar compounds, was observed by Dr. J. W. Cook and Prof. E. C. Dodds, British scientists, who also produced in the laboratory a chemical compound having considerable oestrogenic action.

A reducing substance was discovered in cancer tissue by Dr. Leslie J. Harris of the Cambridge, England, Nutritional Laboratory; significance of the discovery lying in the fact that increase of reducing action is one of the most important characteristics of cancer tissue.

A substance capable of inhibiting the growth of certain forms of cancer cells has been obtained from chicken tumor extracts and from some normal tissues (placenta and embryo skin) was reported by Dr. J. B. Murphy, Rockefeller Institute.

Good results of treatment of certain cancerous diseases with continuous low-voltage doses of X-rays over the entire body were reported by Drs. Lloyd F. Craver and William S. MacComb, Memorial Hospital, New York City.

Cancer treatment by adjusting the content of various minerals in the blood is not justified on the basis of present knowledge, studies on the role of sodium,

potassium, calcium and magnesium in cancer, made by Dr. M. J. Shear, U. S. Public Health Service, at Harvard Medical School, showed.

Successful treatment of bone cancer by colloidal arsenic was reported by Drs. A. C. Hendrick and E. F. Burton of Toronto.

A substance produced by the female sex glands is being used by Dr. H. Beckwith Whitehouse of Birmingham, England, to treat a precancerous condition of the breasts on the theory that the sex hormone slows up the activity of the pituitary gland, faulty function of which is considered by Dr. Whitehouse to be the cause of the breast condition.

Liability to cancer as such is not inherited; length of life and susceptibility to certain irritants are the only hereditary factors that can influence the development of cancer, studies of Drs. M. R. Curtis, W. F. Dunning and F. D. Bullock of Columbia University were reported to have shown.

Experiments supporting the view that cholesterol prepares the soil for the growth of cancer by acting as an accumulator of light were reported by Dr. A. H. Roffo, Buenos Aires.

The cancer-producing constituent of coal-tar was found to be 1.2 benzpyrene by Drs. J. W. Cook, I. Hieger and C. Hewett of the London Cancer Hospital (Free) Research Institute.

New knowledge of the rare and puzzling disease, hyperparathyroidism, was gained through the courage of a patient which enabled medical scientists of Boston to discover, after seven operations, the cause of the disease in a mediastinal tumor of the parathyroid glands, the first such tumor ever found in that place.

Breakdown of the phosphocreatine mechanism of the body with resulting excessive excretion of creatine from the body is the basis for the muscular weakness of Graves' disease and of another condition, progressive muscular dystrophy, Drs. E. Shorr, H. B. Richardson and H. G. Wolff of Cornell Medical School and New York Hospital reported.

Death from a diet deficient in vitamins, minerals or other vital food factors is not simply a case of starvation, as previously thought, but may be due to other factors, such as faulty use of fats, which is the cause of death in magnesium deprivation, Drs. E. V. McCollum, H. D. Kruse and Elsa Orent, Johns Hopkins School of Hygiene, found.

Crystals of apparently pure vitamin B_1, preventive of the Oriental disease beri-beri and other nerve disorders, were obtained by Drs. Atherton Seidell and M. I. Smith, U. S. National Institute of Health.

Scurvy-preventing vitamin C was prepared synthetically by Dr. T. Reichstein and associates at the Polytechnic Institute of Zürich, who obtained pure crystals of l-ascorbic acid, considered to be identical with vitamin C.

A case of scurvy in man was cured by injections of ascorbic acid, formerly called hexuronic acid and considered identical with scurvy-preventing vitamin C, Dr. Poul Schultzer, resident physician of the Copenhagen Municipal Hospital, reported.

Connection between diet and cataract of eye was reported by several investigators: Prof. H. K. Muller, University of Basel, Switzerland, reported experiments showing that lack of vitamin C might be a cause of cataract; Drs. Paul L. Day, William C. Langston and K. W. Cosgrove, Little Rock,

Ark., and Dr. Arthur M. Yudkin, New Haven, reported studies showing that lack of vitamin G may be a cause of cataract.

Definite evidence of an anti-growth factor in the parathyroid glands was found by Drs. C. J. Eastland, N. Evers and J. H. Thompson of London.

Resistance to disease is a hereditary trait like color of eyes, hair or skin, studies with mice at the Rockefeller Institute for Medical Research showed.

Research indicating that alcoholic cirrhosis may be due not to alcohol from beverages but to phosphorous from the iron and steel beverage containers was reported by Dr. Frank Mallory of Boston.

The exact method by which blow-fly maggots act to clean and heal stubborn wounds was finally discovered by a group of Pittsburgh scientists who observed that the maggots throw out into the wound a secretion having weak digestive action which liquifies the dead and decaying matter.

Vaccination against smallpox was successfully carried out with virus grown on hen-eggs instead of with calf-lymph virus by a method developed by Prof. E. W. Goodpasture and associates of Vanderbilt University Medical School.

A "spreading factor" produced in living tissue by invading germs and making it easier for the germs to invade new territory in the tissues was discovered by investigators at the Rockefeller Institute for Medical Research.

Microcolonies of leprosy bacilli were grown on artificial medium outside the body of man or other animal, it was claimed by Drs. Earl B. McKinley and Elizabeth Verder of George Washington University Medical School.

A serum for protection against tularemia or rabbit fever which apparently reduced the severity of the disease in 72 patients was developed by Dr. Lee Foshay and Prof. W. B. Wherry, University of Cincinnati.

Evidence that centers responsible for blood pressure control, heart rate control, breathing control and sweating, shivering, hiccoughing, yawning and other functions of the autonomic nervous system are probably located in the diencephalon or interbrain was found by Prof. Wilder Penfield, McGill University.

Heat or cold or physical effort may cause headaches, asthma, skin eruptions and other symptoms of allergy in sensitive persons, Dr. W. W. Duke of Kansas City reported. European physicians reported cases of cold allergy which suggest that people with idiosyncrasy to cold are in danger of drowning from bathing in cold water.

Thorium dioxide, new chemical used to diagnose spleen and liver diseases, was found by Drs. Ernest A. Pohle and Gordon Ritchie of the University of Wisconsin to produce such injurious changes in the liver and bone marrow of animals that they recommended restriction of its use to incurable cases.

A new remedy for poisonous potassium cyanide has been developed by Drs. K. K. Chen and G. H. A. Clowes and Charles L. Rose of the Lilly Research Laboratories, the remedy being made up of sodium thiosulphate and amyl or sodium nitrite.

Use of a magnet to isolate certain tissue cells after feeding them iron was reported by Drs. Peyton Rous and J. W. Beard, Rockefeller Institute.

Transposed organs are the result of developmental accidents, Dr. Harold Cummins of Tulane University concluded from a study of the direction of the hair whorl and of palm prints in these rare cases.

Amount of pepsin in stomach juice of patients suffering from stomach ulcer was found to be a good index of the progress and outcome of the disease by Drs. Arnold E. Osterberg and F. R. Vanzant, Mayo Clinic.

Bacteria survived freezing for weeks in liquid helium at a temperature of about 450 degrees below zero F. and were able to multiply after being thawed out.

Foot-and-mouth disease virus may invade the bodies of cattle through the nostrils, experiments at the Rockefeller Institute for Medical Research seemed to show.

That the yellow fever mosquito can transmit a serious epidemic disease of horses and mules, Kansas-Nebraska horse plague, was reported by Maj. R. A. Kelser, U. S. Army Medical School.

Bone conduction as an aid to hearing for deafened persons attained practical application in America through the development of several portable devices for individual use and one permanent one for group use.

Cyclopropane, gas anesthetic discovered by Prof. V. E. Henderson, University of Toronto, was used for the first time on a series of patients by Drs. J. A. Stiles and W. B. Neff at the University of Wisconsin.

A device for the removal of plaster casts, working as smoothly as a modern can-opener, was produced in the General Electric research laboratory.

CHEMISTRY.

The world's heaviest water, containing 99.9 per cent. of the heavy isotope (mass two) of hydrogen (deuterium) was made by Prof. Gilbert N. Lewis, University of California.

Electrolytic separation of heavy hydrogen (deuterium) and the manufacture of heavy water made with it was undertaken in several American laboratories and the properties of compounds containing the heavy isotope were determined.

Concentration of heavy water out of ordinary water by distillation and adsorption was accomplished by Drs. E. W. Washburn and Edgar R. Smith, U. S. Bureau of Standards.

Heavy water was found in salt deposits formed in now extinct stagnant seas and in the Dead Sea and Great Salt Lake, through analyses made by Dr. E. W. Washburn and associates, U. S. Bureau of Standards.

Protium was the name suggested for the atom of ordinary hydrogen of mass one to distinguish it from double weight or heavy hydrogen of mass two which was christened deuterium.

A non-poisonous electroplating solution containing disodium diaquodioxalatocupriate, sodium sulphate and boric acid was developed by Dr. Colin G. Fink and Chaak Y. Wong, Columbia University, to replace the cyanide bath now commonly used for copper plating of steel.

Two new isotopes of mercury with atomic weights 197 and 203 were discovered by Prof. F. W. Aston, Cambridge University, England.

King Tut's purple surface films on gold were duplicated by Prof. R. W. Wood, Johns Hopkins University, and proved to be due to the presence of iron in the gold.

Maleic acid, made as a synthetic compound, will keep edible fats and oils from becoming rancid, Dr. G. R. Greenbank, U. S. Department of Agriculture, discovered.

The method of using an electric current to remove salt crusts from antique metal objects was applied by Dr. Colin G. Fink to antique Greek pottery vases.

Tricalcium phosphate prevents sugar and salt from caking, H. V. Moss and associates, Provident Chemical Works, St. Louis, reported.

Sweet potato starch is a satisfactory sizing for cotton yarn and may become a valuable commercial raw material, F. H. Thurber, U. S. Bureau of Chemistry and Soils, found.

A new type of sulfur recovered from coke-oven gas by liquid purification is an effective fungicide, insecticide and soil conditioner, it was found by Vincent Sauchelli, Koppers Research Corporation, Pittsburgh.

Light weight aluminum foil sheets separated by air spaces of about ¼ inch are extremely good for heat insulation, it was reported by Ralph B. Mason, Aluminum Company of America.

A new method of producing solid carbon dioxide (dry ice) from gas mixtures containing only 10 per cent. or less of the carbon dioxide was reported by Dr. Frank E. E. Germann, University of Colorado.

A new fermentation to produce butylene glycol from surplus farm products was reported by Prof. Ellis I. Fulmer, L. M. Christensen and A. R. Kendall, Iowa State College.

Diazodinotrophenol may be used effectively to initiate the detonation of high explosives such as dynamite or TNT, L. V. Clark, U. S. Bureau of Mines, found.

A new selenium insecticide for the control of the red spider was reported by C. B. Gnadinger, McLaughlin Gormley King Company, Minneapolis.

A new process for canning tomato juice, insuring the quick removal of oxygen, preserves the vitamin C content, E. F. Kohman, of the National Canners Association, and associates at Columbia University, found.

A new variety of vinyl resin was applied to the making of a multitude of common articles from false teeth to wall panels, it was reported by J. G. Davidson and H. B. McClure, of the Carbide and Carbon Chemicals Corporation and Mellon Institute of Industrial Research.

A revision of the Pure Food and Drugs Act which includes within its scope cosmetics and applies to advertising as well as labels was prepared by the U. S. Department of Agriculture for submission to Congress.

Acetamide, made from acetic acid and ammonia, has a wider range of solvent power than any other known substance, Prof. O. F. Stafford, University of Oregon, demonstrated.

A new test for lead, consisting of the reddening of a greenish solution of the aniline dye, diphenyl-thio-carbazone, was developed by H. J. Wichman, U. S. Department of Agriculture.

Mining of sulfur under water making available large deposits under lakes and swamps in Louisiana was perfected by Lawrence O'Donnell, Louisiana chemist.

Growth-stimulating "pantothenic" acid was found in many different kinds of plants and animals and was concentrated by Dr. Roger J. Williams and Carl M. Lyman, Oregon State College.

Leather that needs no dressing and only a little rubbing to keep it polished was developed at the Mellon Institute of Industrial Research.

Paper was made commercially from young Southern pine under the direction of Dr. Charles H. Herty and regular editions of nine Georgia newspapers were printed on it.

A mercury-vapor detector, about three times as sensitive as previous types, operating if there is one part mercury vapor in 100,000,000 parts of atmosphere, was produced by the General Electric Company.

And so went science "marching on" in 1933.

IVOR GRIFFITH.

THE YIELD OF EXTRACTIVE IN UNSTANDARDIZED OFFICIAL EXTRACTS (B. R. Veness)—*Dry Extract of Cascara Sagrada*—The drug in coarse powder was percolated to exhaustion. The percolate was boiled to precipitate any proteid matter, filtered, evaporated to dryness and dried at 100° C. to constant weight. Average yield, 24 per cent. *Extract of Gentian*—After weighing, the soft extracts were dried at 100° C. and again weighed. The difference in weight between the dry and soft extracts indicated the amount of water present and assisted in maintaining uniformity of water content of the soft extracts. Average yield, 40 per cent. *Extract of Liquorice*—The same precautions were taken as for Extract of Gentian. Average yield, 30 per cent. *Dry Extract of Krameria*—The percolate was boiled to inactivate the enzyme present, and then evaporated to dryness. Average yield, 11 per cent. *Liquid Extract of Liquorice*—The percentage w/v of solids from samples examined were: 49.8 per cent., 50.6 per cent., and 50.7 per cent. As the specific gravity is fixed this value of about 50 per cent. may be taken as constant. Consequently, as the average extractive from liquorice, dried at 100° C., is shown in the paper to be 23.9 per cent., the average yield of liquid extract obtainable from the root will be $23.9 \times 2 = 47.8$ per cent.—(From the School of Pharmacy, University College, Nottingham.—Through *Phar. Jour.*)

LOOKING BACKWARD

A reprint from the pages of the American Journal of Pharmacy, January, *1834*. (Editor, Dr. R. Egglesfield Griffith.)

"Pomatum for preventing the hair from falling out.—M. Aubergier recommends the following preparation for that purpose:

Prepared beef-marrow	6 drachmas
Oil of sweet almonds	2 drachmas
Red bark of Peru	1 drachma

The powdered bark is to be first moistened with a small quantity of the oil of almonds, and then the remainder added and well incorporated; the marrow is to be melted at a moderate temperature and gradually poured into the above mixture, and the whole triturated until cold!"

Fifty years later.—The American Journal of Pharmacy, *1884*. (Editor, John M. Maisch.)

"Professor Gross suggests the following formula for a hair tonic:

Tinct. cantharidis	℥iss
Tinct. capsic.	gtt.xx
Glycerini	℥ss
Aq. coloniensis	q. s. ad. ℥vi

Misce.

Sig. Hair tonic."

and another half century—January, 1934—The American Journal of Pharmacy.

"To determine the correlation between the height of the forehead and intellectuality in males, measurements were made of 510 Old Americans with at least three generations American born on both sides of the family; of 118 Old Americans from the highlands of northeastern Tennessee, an extremely backward group; of 25 Old Americans, members of the National Academy of Sciences, and of 32 members of the same group, irrespective of nationality. There were 118 members of the National Academy whose foreheads could not be measured owing to *lack of hair* over the forehead."

All of which indicates that very little progress has been made in the art and science of cranial reforestation, and that the thousands of hair tonic formulas recorded over the ages are nothing but hairy persiflage!

IVOR GRIFFITH.

ORIGINAL ARTICLES

THE RELATIVE CONCENTRATION OF ESTERASE AND LIPASE IN ADIPOSE TISSUE

By Joseph Samuel Hepburn, A. M., B. S. in Chem., M. S., Ph. D., and Harry McDuffy Moore, B. S., M. D.

THE purpose of this research has been to ascertain the relative concentrations of the enzymes esterase and lipase in the adipose tissue or crude fat of certain animal species: Chicken (*Gallus domesticus*), turkey (*Meleagris gallopavo*), goose (*Anser anser*), lamb (*Ovis aries*), and man (*Homo sapiens*).

The human adipose tissue was obtained at autopsy within twenty-four hours of death from well nourished individuals; the other specimens were obtained from animals either freshly slaughtered or else kept under mechanical refrigeration for a period not exceeding fifteen days after death.

A sample of the tissue weighing 50 grams was chopped and triturated thoroughly with sand; the resulting mass was then triturated with several successive portions of distilled water. The resulting aqueous extract was filtered, first through wire gauze, then through several thicknesses of cotton gauze. The total volume of water used was so regulated that 500 cc. of filtrate were obtained.

An aliquot portion of this filtrate, measuring 100 cc., was placed in an Erlenmeyer flask of 250 cc. capacity for each determination proper and each blank or control experiment. In the control experiments, the filtrate was boiled, then cooled to room temperature, before addition of the other reagents. Next, 1 cc. of the proper substrate (ethyl butyrate for esterase, and tributyrin for lipase), and 0.3 cc. of phenolphthalein solution (1 per cent. in alcohol) were introduced into each flask. Each reaction mixture was thoroughly mixed by vigorous shaking, and rendered neutral by addition of sufficient 0.1 normal solution of sodium hydroxide; 1 cc. of toluene was added as a bactericide; the flask was stoppered, and kept at a temperature of 37.5 degrees C. for a period of seventy-two hours. Then the acidity of the contents of each flask was determined by titration with 0.1 normal solution of sodium hydroxide. The numerical difference between the volume of this standard alkali solution required to titrate

the determination proper, and the volume required to titrate its control was a measure of the butyric acid liberated by the hydrolytic enzyme, and has been reported in the tabulated results.

Three samples of chicken fat, and two samples of each of the other fats were used.

On reference to the table, it is seen that both esterase, the enzyme which hydrolyzes simple esters, and lipase, the enzyme which hydrolyzes glycerides, were present in each sample of adipose tissue. The two enzymes occurred in different concentrations in a given sample. However, the predominance of a given enzyme was uniform in a given species, lipase being predominant in the chicken and the turkey, and esterase in the goose, the lamb, and man.

Occurrence of Esterase and Lipase in Adipose Tissue

Sample No.	Species	Esterase	Lipase
1	Chicken	2.10	9.25
2	Chicken	2.40	9.90
3	Chicken	2.65	10.10
4	Turkey	4.40	9.90
5	Turkey	4.50	11.20
6	Goose	9.55	8.60
7	Goose	9.25	9.00
8	Lamb	44.35	19.25
9	Lamb	47.50	17.80
10	Man	7.15	5.50
11	Man	7.80	5.95

John Clifford English Laboratories of Physics and Chemistry, Hahnemann Medical College, Philadelphia.

THE CHEMICAL COMPOSITION OF EXUDATES

By Joseph Samuel Hepburn, A. M., B. S. in Chem., M. S., Ph. D., and Homer Burkert Fegley, B. S.

TWO samples of exudate, from different patients were submitted for chemical examination.

One sample was a *pleural exudate,* from a patient who died before a diagnosis could be made, and an autopsy was refused. The sample was a white, milky fluid, measured approximately 26 cc., and contained a small clot of fibrin which was discarded. This sample was analyzed for its content of total solids, moisture, ash, fat, and total nitrogen, and for the presence of occult blood. The quantity was insufficient to test also for the presence of enzymes.

The other sample was a *peritoneal exudate.* It was slightly yellow, apparently serous, and measured approximately 750 cc. as submitted. The quantitative analysis included total solids, moisture, ash, fat and total nitrogen. Tests were also made for the presence of occult blood, esterase, and amylase.

In the quantitative determinations, all subsamples were weighed in glass-stoppered weighing bottles. The weight of the stoppered bottle containing the subsample (usually either 5 or 10 cc.) was determined; the subsample was transferred to its proper receptacle; and the weight of the stoppered bottle was again determined. The difference between the two weights was the weight of the subsample.

Total solids, moisture, and ash were determined on the same subsample in a tared silica dish. Total solids and moisture were determined by drying to constant weight, at the temperature of boiling water, using a water-jacketed, gas-heated oven. Ash was determined by incineration of the total solids at a low red heat in a muffle furnace. Fat was determined by the Gottlieb-Röse method, using a Röhrig tube. Total nitrogen was determined by the Gunning modification of the Kjeldahl method.

In the tests for the presence of occult blood, two chromogens, guaiac and benzidine, were used. The exudate (3 cc.) was acidified with acetic acid, then extracted with ether. The ethereal solution was layered over the mixture of 5 cc. of chromogen solution and 2 cc. of hydrogen peroxide solution. Blood, if present, would give a colored zone between the two layers, blue with guaiac, and green with benzidine. The guaiac was used as its tincture, the benzidine as 0.5 per cent. solution in 70 per cent. alcohol.

In the tests for enzymes (esterase and amylase), the period of incubation was twenty-four hours, the temperature of incubation 37.5 degrees C. Blank or control experiments were made on exudate

which had been boiled, then cooled to room temperature. Toluene was used as a bactericide in both the experiments proper and the control experiments.

Ethyl butyrate was used as the substrate for esterase. The mixture of 1 cc. of exudate, 1 cc. of substrate, and 5 cc. of water was rendered neutral to phenolphthalein by cautious addition of 0.1 normal sodium hydroxide solution. After incubation, the increase in acidity was titrated with the same solution.

In the test for amylase, 1 cc. of exudate and 5 cc. of 1 per cent. starch paste were used. After incubation, both Lugol solution and Benedict qualitative solution were used to test for the products of hydrolysis. A mixture of 1 cc. of the reaction mixture and 10 cc. of the Benedict solution were heated to detect the presence of reducing sugar. To obtain the reaction with iodine, 1 cc. of the reaction mixture was diluted with 20 cc. of water, then mixed with 0.1 cc. of Lugol solution, and the resulting color noted.

The results obtained may be expressed in tabular form; a numerical value records the per cent. of a given constituent present in the exudate, a plus sign (+) the presence, a zero (0) the absence of that constituent.

	Pleural Exudate.	Peritoneal Exudate.
Total solids	5.96	5.64
Moisture	94.04	94.36
Ash	0.40	0.48
Fat	0.72	0.83
Total nitrogen	0.03	0.20
Occult blood	0	0
Esterase		0
Amylase		+

In the test for esterase in the peritoneal exudate, the titration of the determination proper and that of the blank were exactly the same after incubation; therefore esterase was absent. In the test for amylase in this exudate, the determination proper after incubation reduced Benedict solution while the control had no reducing action. The determination proper after incubation gave a pale reddish blue color with Lugol solution, the control a deep blue color. Therefore, amylase was present, the granulose or soluble starch had been hydrolyzed, and both erythrodextrin and maltose had been produced.

John Clifford English Laboratories of Physics and Chemistry, Hahnemann Medical College, Philadelphia.

IN MEMORIAM

Joseph Winters England
"A Faithful, Useful Advocate of Real Pharmacy."

"Pharmacy lost a valuable advocate of all that was good in the calling when death called Joseph England."

And those who knew him as the faithful, useful, long-serving worker in the interest of real pharmacy, will long remember him—and regret his passing away.

Affable in personality, charitable in his attitude to others who did not always see things as he did, possessing wide knowledge of pharmacy in all its phases, one who had traveled extensively in his attendance at the meetings of the many organizations with which he was identified, he had a host of friends who sincerely regret that they "shall see his face no more forever" on earth.

Joseph Winters England, 1883, chairman since 1924 of the Board of Trustees of the Philadelphia College of Pharmacy and Science, died suddenly at Atlantic City, New Jersey, December 2d. From his college days, he was an outstanding figure in pharmaceutical circles, not only in this country, but throughout the world. In his graduation year he won the Henry C. Lea prize for the most meritorious thesis.

In 1886 he was appointed chief pharmacist of the Philadelphia Hospital, and in 1900 he became head of the pharmaceutical department of the H. K. Mulford Company, founded by Henry K. Mulford, 1887. He left that position in 1902 to become scientific director of Smith, Kline & French Laboratories, Philadelphia, where he remained until his death.

He was widely known for his researches in pharmacy, and was the author of hundreds of original articles of a scientific character and many of an historical nature. At one time he was a member of the revision committees of both the U. S. P. and the N. F.

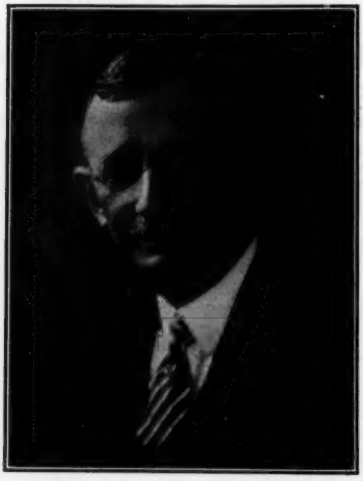
He served as curator of the College museum from 1887 to 1920 and had been trustee of the College since 1892. He was one of the youngest men ever elected to that position.

From 1893 until his death he had served as a member of the publication committee of the College and since 1904 had been recording secretary of the Alumni Association. He served as its president in 1891-92.

Other services included the acting editorship of the *A. Ph. A. Bulletin* in 1910 and 1911, and the chairmanship of that association's committee on publications. He also had been secretary of the A. Ph. A. Council. He was the editor of "The First Century of the Philadelphia College," a volume widely acclaimed for its accurate and fascinating portrayal of the first 100 years of this College.

In 1926 he was president of the Pennsylvania Pharmaceutical Association, and in 1921-22 held the presidency of the Philadelphia branch of the American Pharmaceutical Association.

The sincere sympathy of the JOURNAL is extended to the wife and daughter left to mourn the loss of this truly fine and worthy gentleman.



Walter Valentine Smith

Walter V. Smith, president of Smith, Kline & French, Inc., and a member of the Board of Trustees of the Philadelphia College of Pharmacy and Science, passed away November 9th, at his home in Mt. Airy, Philadelphia.

He was the son of Valentine T. Smith, an apothecary, and Elizabeth Walter Smith, and was born November 22, 1867. He received his early education in the public schools of Philadelphia; Nazareth Hall, Nazareth, Pa.; and the Lauderbach Academy, Philadelphia, Pa.

He early evinced a keen interest in the drug business and commenced to work in his father's store at an early age. Later, he matriculated in the Philadelphia College of Pharmacy and was graduated in 1887, the subject of his thesis being "Oleates."

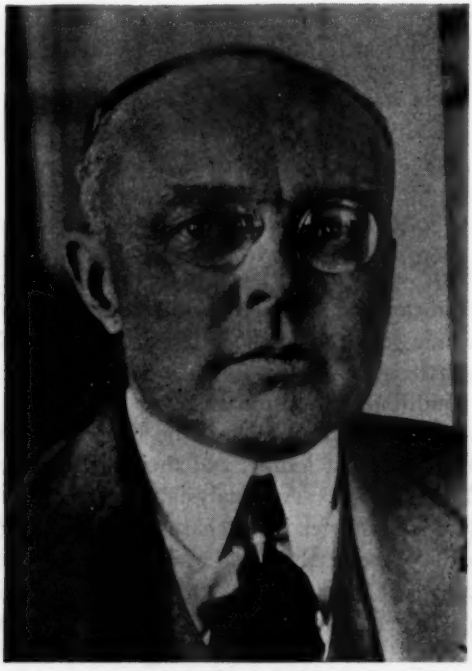
At the death of his father, in 1890, he was called upon, at the age of twenty-three, to assume the management of the business of Valentine H. Smith & Co., and in 1900, when the business was incorporated, he was made its president.

When the Smith, Kline & French Company, founded in 1841, was merged on July 1, 1929, with Valentine H. Smith & Co., Inc., founded in 1830, two new organizations were formed—the Smith, Kline & French Laboratories, of which Mr. C. Mahlon Kline was

made president, and Smith, Kline & French, Inc., of which Mr. Walter V. Smith was made president.

Mr. Smith took a deep interest not only in his business, but in many other activities. He was a member of the National Wholesale Druggists' Association (had served in the capacity of vice-president), the American Pharmaceutical Association, the Pennsylvania Pharmaceutical Association, the New Jersey Pharmaceutical Association, and the Philadelphia College of Pharmacy and Science, having been a member of its Board of Trustees since 1921. For more than thirty-five years he had been actively identified with the work of the Philadelphia Drug Exchange, serving as its president in 1900, and as a member of its board of directors since.

His genial personality and ready hand to help will be missed by many who sought and found his friendship.



Philip H. Johnson

Philip H. Johnson, prominent architect and a member of the Board of Trustees of the Philadelphia College of Pharmacy and Science, died November 29th at Ridley Park, Pennsylvania.

He was widely known as an architect, particularly of institutions and public buildings. Under his direction, the new and modern buildings of the Philadelphia Hospital for Mental Diseases, the Philadelphia Hospital for Contagious Diseases, and the Philadelphia General Hospital were constructed. He also was the architect of the Philadelphia Convention Hall and of City Hall Annex.

His fame as a designer of hospitals brought him commissions to plan many other such institutions outside of Philadelphia. Among them are hospitals at Allentown, Spring City, Harrisburg, Danville and Norristown.

Philip H. Johnson was an ardent and famed yachtsman. For many years he had been commodore of the Philadelphia Yacht Club at Essington.

He was particularly interested in student welfare at the College and contributed generously to student activity enterprises.

Iodized Eggs—One of the latest dietetic fads is the consumption of iodized eggs in cases of secondary and tertiary syphilis, arteriosclerosis, exophthalmic goiter and other maladies in which iodine is indicated. The eggs are produced in special poultry farms under scrupulous hygienic conditions, the animals being periodically subjected to blood tests and other examinations. The hens are given foods that contain a great quantity of iodine, and their drinking water amounts to a weak iodine solution. An analysis of these eggs made at the chemical analytic laboratories in Bucharest revealed that they contain about 6.75 mg. of iodine per hundred grams, while ordinary eggs contain only 0.012 mg. The iodine in the eggs is in the organic form. A disadvantage of the eggs is their repulsive taste, and patients tire of them. There are in Austria two, in Hungary three and in Rumania two special poultry farms where iodized eggs are produced. (*Jour. A. M. A., August* 5, 1933, p. 460.)

PROGRESS IN THE MEDICAL SCIENCES

Chymo-Trypsin—A New Pancreatic Enzyme

Discovery of a powerful protein-digesting enzyme in the pancreas has just been announced by Drs. M. Kunitz and John H. Northrop, of the Rockefeller Institute Laboratories, in a report to *Science*.

The new enzyme, for which the name chymo-trypsin is suggested, was obtained by the action of minute amounts of the well-known pancreatic enzyme, trypsin, on crystals of a protein substance obtained from fresh pancreatic tissues. The newly found protein is named chymo-trypsinogen.

The new enzyme, chymo-trypsin, is quite distinct from trypsin and except in its power to clot milk, its digestive activity is much less than that of trypsin.

The significance of the discovery lies in the fact that it gives new knowledge of how pancreatic enzymes or ferments become active, a matter that has never been agreed upon by scientists. It has long been known that these enzymes are not active in fresh pancreas or in freshly secreted pancreatic juice. They are activated by the action of a ferment from another part of the digestive tract. Since the new enzyme was obtained from apparently pure protein material, it seems that the protein-digesting action of this and perhaps also of the other pancreatic enzymes is a property of the protein molecule.

Vinyl Ether

Vinyl ether (divinyl ether, divinyl oxide) is a preparation of Merck & Company, Inc., originally proposed by Leake and Chen for use in inhalation anesthesia in place of ethyl ether.

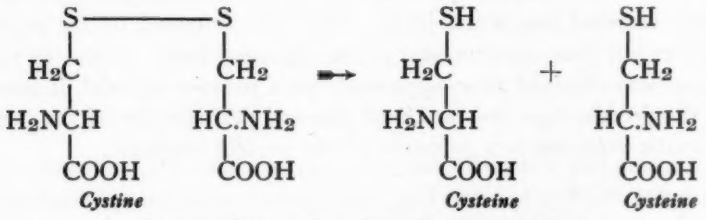
Vinyl ether ($CH_2 = CH.O.CH = CH_2$) was prepared in pure form by Ruigh and Major, of the Merck Laboratory of Pure Research, in 1930. It is a highly volatile liquid (boiling point 28.3 C.), having a peculiar sweetish ethereal odor somewhat reminiscent of that of ethylene ($CH_2 = CH_2$), to which substance it is closely related chemically; it is more inflammable than ether and is relatively unstable in the chemically pure state, forming resin-like polymers, and

decomposing with the development of formaldehyde and formic acid, in the presence of light and air; it is readily decomposed by traces of acid.—(*J. A. M. A.*, Jan. 6, 1934, p. 44.)

Cysteine—A New Healing Agent

Cysteine, a naturally occurring sulphydryl containing amino-acid, obtained by the reduction of the disulphide cystine, a product of the hydrolysis of wool or of the hair of man, is capable of stimulating granulation tissue and epithelium. When applied to cutaneous wounds and ulcers, bacterial growth is inhibited.

Cysteine may be prepared by the method of Gortner and Hoffman from the hair of man. Such keratin-containing structures as hair, nails, hoofs, horns and sheep wool are particularly rich in sulphur, most of which is present in the form of the disulphide cystine. By hydrolysis, hair is converted to cystine, when it is reduced by tin and hydrochloric acid to cysteine hydrochloride. Cysteine (SH-) is readily oxidized to cystine (S-S) by exposure to air, but can be kept indefinitely in the form of the hydrochloride.



Structural formulas of cystine and cysteine.

Cysteine should be made up in a concentration of 0.5 per cent., the solution containing equal parts of physiologic solution of sodium chloride and distilled water. The hydrochloric acid of the cysteine hydrochloride is then neutralized with sodium hydroxide to a pH of 7.0. One gram of cysteine hydrochloride requires 6.35 cc. of normal sodium hydroxide or its equivalent. The neutralized solution should be used within twenty-four hours; however, in well filled bottles it is possible to keep it in refrigeration for several days without much loss. Dressings should be changed twice daily, or more often if there is much drainage.

Cysteine is not only fully as efficient as thiocresol in stimulating qualities, but it possesses two decided advantages from a practical

standpoint. It is without the unpleasant, penetrating odor resembling burnt rubber, common to all volatile sulphydryl compounds. Furthermore, cysteine is less irritating than thiocresol to the surface of skin adjoining the ulcers.

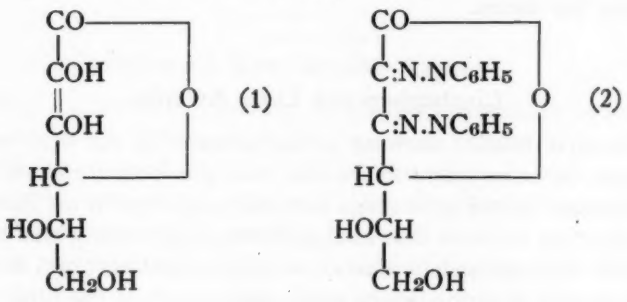
Cinchophen and Liver Atrophy

The first fatality showing yellow atrophy of the liver was reported by Cabot in 1925. Since that time about forty-nine fatalities and fifty-eight severe poisonings have been reported in the literature. It is important to know that fatal accidents may occur within a short time even with therapeutic doses; as small a dose as 3 gm. daily for two days may produce severe toxic symptoms; on the other hand, 324 gm. has been taken in the course of four months before the appearance of toxic symptoms. Either the course of the poisoning is rapid, with the death of the patient, or it takes weeks or even months to recover from the toxic effects. From the reports in the literature it appears that hypersensitivity may play an important part in the production of cinchophen poisoning. In animals, degenerative changes of the liver have been reported only with large doses. Control of the liver function during the administration of cinchophen appears to be advisable. Gastro-intestinal disturbances and the appearance of bile pigments in the urine are the first symptoms of the poisoning. After definite symptoms have set in, the treatment is usually not very effective. There is no specific antidote; occasionally encouraging results have been reported by increasing the glycogen store by a carbohydrate diet, by the injection of dextrose and insulin and by duodenal lavage with magnesium sulphate.—(*J. A. M. A.*, Jan. 6, 1934, p. 59.)

Vitamose

Y. Kotake, of the Medical College in Osaka Imperial University, recently reported the isolation of an unknown hexose, termed "vitamose." After careful study he later discovered that this vitamose is vitamin C. Practical applications of this product for nutritional and culture media purposes are already in progress. It is said that vitamose has had a strong curative action on diseases caused from metabolic disturbances and it stimulates the growth in culture media

of *B. tuberculosis,* rabies organism, and *B. typhosus* when the vitamose is used instead of glucose. The structure of vitamose is indicated in (1) and vitamosazone in (2).—(*News Ed. J. A. C. S.*)



Neo-iopax—A New X-ray Medium

*Di*sodium *N*-methyl-3:5-*di*iodo-4-pyridoxyl-2:6-*di*carboxylate.—$NaOOC.C_5ONI_2.CH_3.COONa$. The *di*sodium salt of *N*-methyl-3:5-*di*iodo-chelidamic acid. Neo-Iopax contains 51.5 per cent. iodine.

Neo-Iopax is used as a contrast medium in intravenous urography. Neo-Iopax occurs as a white, crystalline, odorless powder; very soluble in water; insoluble in acetone, benzine, chloroform, ether and purified petroleum benzine. An aqueous solution is neutral to litmus.

It is distributed by the Schering Corporation, New York City.

Opium Derivatives in the Treatment of Common Cold

Summary of Results

1. This study shows the relative values of various drugs and drug combinations in the treatment of 1039 cases of acute coryza, 262 cases of subacute or chronic colds, 114 cases of influenza and fifty-three cases of acute pharyngitis.

2. Of the drugs studied, only opium and certain alkaloids derived from it seem to be of value in the treatment of acute coryza.

3. Combinations of papaverine with codeine, papaverine with dilaudid, and papaverine with morphine were followed by "definite improvement" in from 74 to 78 per cent. of the cases, and in the dosages used these combinations seem to be practically nontoxic.

4. For general use a combination of codeine and papaverine seems most desirable because of the high percentage of good results obtained with it, its low toxicity, and the absence of danger, or at least of "practical danger," of habituation to it.

5. Morphine and dilaudid (dihydromorphinone hydrochloride) alone were followed by "definite improvement" in nearly as large a proportion of cases (73 and 72 per cent. respectively) but each was distinctly more toxic alone than when combined with papaverine.

6. Codeine, papaverine, powdered opium, and powder of ipecac and opium were followed by "definite improvement" in from 56 to 61 per cent. of cases. The toxicity of these drugs is in the following order: codeine, powdered opium, powder of ipecac and opium and papaverine, with codeine practically as toxic as morphine.

7. Powder of ipecac and opium, although of value in the treatment of acute colds, is no more beneficial than the same amount of powdered opium without the ipecac.

8. Sodium bicarbonate, acetylsalicylic acid and a combination of acetysalicylic acid-acetphenetidin-caffeine give little if any better results in the treatment of acute coryza than the lactose tablet used as a control, each being followed by "definite improvement" in from 35 to 42 per cent. of cases.—(*J. A. M. A.*, Dec. 23, 1933, p. 2050.)

THE PREPARATION AND STORAGE OF SOLUTIONS OF TRIBROMETHYL ALCOHOL (W. H. Butchers, K. Bullock and G. R. Priddey) —Under the name "Avertin" tribromethyl alcohol is used by rectal injection to induce narcosis prior to anæsthesia. A new test indicates decomposition when the acidity of the solution is too low to be indicated by titration with N/50 sodium hydroxide solution. Congo-red requires the liberation of a titratable amount of acid (over 0.5 mil. per 100 mils.) before indicating decomposition. There is progressive decomposition of tribromethyl alcohol in solution when stored at body temperature. Appreciable decomposition occurs when the solution is stored overnight in a vacuum flask and this practice is open to serious objection. Overheating the water with which the tribromethyl alcohol is used to a temperature of 65° C. will cause decomposition immediately detected by the new test.—(From the Pharmaceutical Department of the Manchester Royal Infirmary.—Through *Phar. Jour.*)

SOLVE THIS BETWEEN YOUR JIG SAW PUZZLES

By T. Carroll Davis, M. D.

Philadelphia, Pa.

A BILL for medical services rendered in Brandywine Township, Chester County, near Coatesville, Pennsylvania, about thirty-five miles west of Philadelphia, in 1817, should prove of interest to physicians everywhere. A facsimile of one is presented herewith and a copy of the bill is also printed herewith. The original bill is in my possession. The patient was my great-grandfather. The meticulous care with which the doctor itemized his calls and medicines and the amounts set down, even to ½ cent, are remarkable. The remedies used should point to the diagnosis of the case.

I called the editor's attention to the bill. He felt that many of the readers of *The Medical World* would like to join us in studying this rare old paper. We then submitted the bill to Prof. Charles H. LaWall, Dean of the Philadelphia College of Pharmacy and Science, and he makes out the medication, which to us was a puzzle. Let us quote his letter in full:

"PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE
Founded 1821
Forty-Third Street, Woodland and Kingsessing Avenues
Philadelphia, Pennsylvania

February 20th, 1933.

Office of the Dean
Charles H. LaWall, Ph. M., D. Sc.

Dr. John C. Rommel,
3701 North Broad Street,
Philadelphia.

DEAR DR. ROMMEL: In reply to your letter of February 15th, I have made a number of corrections of errors in your interpretation of the items. My interpretation of August 10th is "two blistering plasters." These were cantharides plasters, as they were the only plasters called by this Latin title at that time. There is no way of identifying the cathartic, but the Pulv. Febrif. was cinchona, which was given in powdered form under that name at that time.

I am not so sure that the number on August 11th referred to the number of doses of Dover powder, but am inclined to believe

Reprinted from *The Medical World*, June, 1933.

that 6 grains of Dover powder were given in one dose. Sacch. Sat. is the abbreviation of Saccharum Saturnini, which was the Latin title used at that time for sugar of lead. This may have been used externally for all we know, as it occurs several times later and in one instance a dram of the substance was given.

On August 14th, Empl. Epispast. *ad col.* means blistering plasters to the neck (collum). On this same date a dram of sugar of lead was given and 6 grains of pulv. febrif.

On the 15th Mist. Ant. might mean any one of a large number of remedies beginning with ant. It might mean antimonial, antacid or any one of a number of such terms. On this same date sugar of lead again appears.

On the 16th, ½ ounce of sweet spirits of niter, together with an anodyne pill, and the anodyne pill of that period was a pill of opium and soap.

On the 17th I think there is no doubt that one dose of powdered calomel was given.

Facsimile of bill for medical services in 1817.

Mr. John Johnston.

To B. Griffiths Dr.

August 10th, 1817.	To Visit. Empl. Epispast. duo.	Dr.			cts
	To Cathart. Pulv. Febrif. dos i.	do		$o	93½
11th	To Visit. Pulv. Dover. vj. Sacch. Sat. . . .	do		o	87½
14	To Visit. Empl. Epispast. ad Col.	do		o	70
	To Sacch. Sat. ℥i. Pulv. Febrif. vj.	do		o	40
15	To Visit Mist. Ant. Sacch. Sat.	do		o	70
16	To Visit. Spts. Nitri dulc. ℥ss. Pil. Anod.	do		o	68½
17	To Visit. Pulv. Cal. dos. i	do		o	55
18	To 2 Visits. 2 vs. Pulv. Cathart. iij.	do		1	43½
	To Empl. Epispast.	do			20
19	To 2 Visits. 2 vs. Pulv. Cathart. iv.	do		1	45
20	To Visit. vs. Pulv. Cathart. i.	do			68½
21	To 2 Visits. vs. Pulv. Cathart. iij.	do		1	31
22	To Visit. Pulv. Cathart. iij.	do			68½
23	To Visit. Pulv. Cathart. ij.	do			75
24	To Visit. Pulv. Cathart. ij. Pulv. Ant. v	do			81
26	To Visit. Pulv. Ant. vij. 2 Cathart.	do		o	83
28	To Visit. Pulv. Sudorif. viij. 2 Cathart. .	do		o	87½
	To Empl. Epispast.	do			20
30	To Visit. Spts. Nitri. dulc. ℥ss. Cathart. .	do		o	75
Sept. 1st.	To Visit. Spts. Nitri dulc. — Cathart. . . .	do		o	70
3	To Visit. Pil. Cath. ij. Spts. Nitri.	do			
6	To Visit.	do		1	06
				$16	58½

On the 18th there is one dose of a cathartic powder, which at that time might mean any one of three different combinations. One of these was a mixture of aloes, canella and serpentaria; another was a mixture of calomel, rhubarb and oil of cinnamon. Still another was a compound of scammony. What you interpreted as 2 os. on the 18th and a number of succeeding instances is merely a duplication or checking up of the number of visits, as 2 vs., as you can see if you compare the handwriting closely. This makes this line 2 visits (2 vs.), pulv. cathar. 3 grains. On this same date blistering plaster was given.

On the 19th there were two visits (2 vs.) and cathart. powder of 4 grains.

On the 20th there was a visit (vs.) and 1 grain dose of cathartic powder.

On the 21st there were two visits and a 3-grain dose of cathartic powder.

On the 22d there was one visit and a 3-grain dose of the cathartic powder.

On the 23d there was one visit and a 2-grain dose of cathartic powder.

On the 24th there was one visit, a 2-grain dose of cathartic powder and a 5-grain dose of antimonial powder, which at that time was James' powder, consisting largely of antimony oxide.

On the 26th there was one visit with a 7-grain dose of antimony powder and two cathartics unidentified.

On the 28th there was an 8-grain Pulv. Sudorif., which was another name for Dover's powder, used at that time, and two cathartics unidentified, and also on this date there was a plaster.

On the 30th there was one visit with a half-ounce of sweet spirits of niter and an unidentified cathartic.

On September 1st there was one visit with sweet spirits of niter, amount not stated, and an unidentified cathartic.

On September 3d there was one visit with two cathartic pills and spirits of niter, amount not stated.

I am unable to say what the patient had, but if he did not have anything before the doctor started his visits, he had it afterwards with all that medication in one month.

I had intended writing this up myself at some future time for the AMERICAN JOURNAL OF PHARMACY, but if you will use my interpretation and send me a copy of your paper, I shall be glad to have it published in the AMERICAN JOURNAL OF PHARMACY some time in the near future.

Very truly yours,

CHARLES H. LAWALL,
Dean of Pharmacy."

On September 6th the patient was found sufficiently well for the doctor to discontinue his visits and at a convenient time sent his bill.

What Is Your Diagnosis?

My feeling was that the patient was suffering from pneumonia or a similar respiratory disease, but my friend, the editor, has an entirely different diagnosis, which I submit.

[I think the man had typhoid fever and did not send for the doctor until he had been sick for some days. As typhoid comes on slowly, it seems to me the man was able to hold up for a while before he was sure he needed a doctor.—ED.]

We would like readers of *The Medical World* to send in their diagnosis of the case, judged from the bill as here presented. We will publish your opinions that all may read. If you have any diagnosis or comment, send it to the editor or to me. We are willing to listen to consultants.

3128 North Broad Street.

THE PRECIPITATION OF ALKALOIDS BY TANNINS AND THE USE OF ANTIPYRINE IN THE DETECTION OF TANNINS (Alan H. Ware and Victor Smith)—Statements recently published implying that it is the exception rather than the rule for alkaloids to be precipitated by tannins are erroneous. Further, 49 substances representing 29 individual bases, were pricipitated by tannins in the presence of an acid admixture of sodium phosphates. The authors suggest that this method be used as a routine test for alkaloids to confirm the results obtained with Dragendorff's reagent. They also describe a method for applying the test to vegetable powders and extractives. The authors also examined the behavior of antipyrin with aqueous vegetable extractives and find that it gives a usually bulky precipitate with all those which contain tannin over a wide range of *p*H, but most completely in the presence of an acid admixture of phosphate. They recommend the method as affording an apparently specific test for tannins useful for confirming the result given to the test with an iron complex.—(From the Plymouth and Devonport Technical College.—Through *Phar. Jour.*)

SOLID EXTRACTS

Liebig, correctly interpreted the soil science and explained plant nutrition but missed a cog in his thoughts on fermentation. Most persons know him best for his extract of beef—but few know that he was the inventor of the silver reduction scheme of mirror manufacture, which gives us a chance to see ourselves, though not as others see us.

Scheele, the Swedish apothecary scientist, died in 1786, a young man of forty-four. In addition to the well-known discoveries forever associated with his name—he had announced to a world none too ready to accept such theories—preservation by sterilization, the profounder chemic action of the violet end of the spectrum, the use of silicic acid in fireproofing and of carbondioxide as a fire extinguisher.

He was a tireless investigator and the first and finest of the pharmaceutic pioneers.

A means of quickly reversing the deep unconsciousness caused by ether and other anesthetics and, in some cases, of bringing back from the brink of death, overanesthetized patients, was recently announced to the American Association for the Advancement of Science by Dr. Walter V. MacGilvra, a dental surgeon of the Harvard Dental School, after experiments in which the Harvard medical and dental faculties have co-operated.

An injection of weak hydrochloric acid injected directly into the blood is the agent that has been found effective in recalling and restoring to sensibility patients who would otherwise sleep for hours, and in some cases would never awake.

This acid method of terminating anesthesia has been christened "palinaesthesia," the name having been selected with the blessing of the Eliot professor of Greek at Harvard, Prof. Charles B. Gulick. A rough English equivalent is "renewed feeling."

Because extreme alcoholic intoxication, asphyxiation, near drowning, severe electric and other shocks are very similar to the purposely induced anesthetic states caused by ether and other drugs, the same treatment may prove effective in rescuing and bringing back to full use of the faculties, those who suffer from such difficulties. Palinaesthesia has not yet been tried on an extremely intoxicated person "because the experimenters could not locate such a case."—This was in Boston!!

Water flows uphill in plants through the many thousands of tiny tubes that make up the woody parts of the stems, but it does not flow as water does in the plumbing pipes of a house. It does not go up in solid streams, at least in times of water scarcity, but forms films that stick to the walls of the tubes and flow along them, with hollow spaces in the middle filled with water vapor.

"Archie"—the cockroach is now having its fling at science. This humble hunted insect, millionfold victim of brooms, poisons and scalding water wherever he shows his persecuted head, was recommended as a sensitive living test tube for vitamins, in place of the bigger, more expensive and heartier-eating laboratory animals such as mice and rats, by Dr. Clive M. McCay of Cornell University.

Hypodermic injection is a relatively recent discovery having been introduced into medical practice sometime around 1850. All of which proves that man is centuries slow in taking hints from his kith and kin in the insect world. The busy bee had long since known the trick.

A "blood-curdling" sound need no longer be considered a piece of poetic license, for it has been recently proven that protein will curdle or clot if certain intensified sound waves are sent to it.

Thus an egg was coagulated as though soft boiled by these audible sounds. Ethyl acetate was broken down to produce acetic acid, vegetable oils were "cracked" with the generation of acetylene gas, and starch was to a slight extent decomposed to produce glucose. The sound vibrations used ranged in frequency from 1,000, about two octaves above the middle C on the piano, to 15,000, a very shrill squeak. All of this only proves that grandmother was right when she charged a thunderstorm with spoiling her buttermilk batch.

Certain drinking waters contain traces of soluble fluorides and may harm tooth enamel if frequently ingested. Municipal alum flocculation and sedimentation basins, however, almost entirely remove this dangerous chemical, although water engineers did not know this to be a fact until recently.

An attempt has been recently made to catalog smells and assign graded numbers to each peculiar and particular odor.

"You may break, you may shatter the vase if you will
But the smell of 6523 hangs round it still."

That is the modern version of a sweet old couplet.

Each digit expresses one of four components in odor sensations, which in order of writing are fragrant, acid, burnt, and caprylic. The numbers indicate intensity on a scale of eight. The meaning of caprylic may be understood if it is known that the word is derived from "goat."

Mothballs, or naphthalene, in this code rate 4564, while the familiar gas of rotten eggs, hydrogen, sulfide, is 5346. The sweetest smell reduced to this odor code so far is that of vanillin, 6021, and that may explain why so many of us like vanilla flavoring.

A none too pleasant smell, strangely used as a basis for some of the most expensive perfume, is skunk-like civet, 5777. But the scale failed when the chemists attempted to express the asafoetida integers.

AT THE PRESCRIPTION COUNTER

NEW FORMULAS—MOSTLY OF BRITISH ORIGIN

Compound Elixir of Thyme

Ammonium bromide	36 gm.
Spirit of chloroform	85 cc.
Distilled water	85 cc.
Fluidextract of thyme	125 cc.
New Orleans molasses	165 cc.
Glycerin	125 cc.
Syrup, to make	1000 cc.

Dissolve the ammonium bromide in the distilled water, add the fluidextract of thyme, then the spirit of chloroform and the other ingredients in order.

The dose is one teaspoonful in the treatment of coughs, notably whooping cough.

Quinine Lotion for Sunburn

The *Pharmaceutical Journal* suggested the following in a recent issue as a quinine lotion for sunburn:

Quinine hydrochloride	6 gm.
Zinc oxide	15 gm.
Talc	15 gm.
Glycerin	40 cc.
Rose water, to make	100 cc.

Mix.

Because of the alleged imperviousness of quinine solutions to the burning range of light, this lotion is credited with real value.

Injectio Ferri et Arseni

Strong solution of ferric chloride..	1.75 cc.	33½ m.
Citric acid	2.00 gm.	35 gr.
Arsenic trioxide	0.13 gm.	2¼ gr.
Dilute solution of ammonia.....	a sufficient quantity	
Sterilized water	to 100.00 cc.	to 4 fl. oz.

Mix the strong solution of ferric chloride with 40 cc. (1½ fluid ounces) of distilled water and add the mixture very gradually with constant stirring to a mixture of 6 cc. (120 minims) of dilute solution of ammonia and 25 cc. (1 fluid ounce) of distilled water; allow to stand for two hours, stirring every quarter of an hour; filter, using slight suction, and wash the precipitate with distilled water until completely free from chloride. Suspend the precipitate in 20 cc. (360 minims) of sterilized water and add the suspension to a hot solution of the citric acid in 5 cc. (90 minims) of sterilized water, adding a small portion of the suspension at first and allowing it to dissolve before adding the bulk. Maintain the mixture at a temperature just below the boiling point for forty-five minutes and then add a further 20 cc. (360 minims) of sterilized water, and a solution of the arsenic trioxide dissolved with the aid of gentle heat in a mixture of 15 cc. (240 minims) of sterilized water and 1 cc. (20 minims) of dilute solution of ammonia. Finally, add 1.5 cc. (30 minims) of dilute solution of ammonia or sufficient to give a reaction not acid to methyl red, and not alkaline to phenol red, and sufficient sterilized water to produce the required volume. Sterilize by heating in an autoclave or by tyndallization.—(Formula proposed for British Pharmaceutical Codex.)

Cold Cream

Cold Cream has been in favor for many centuries and when King Tutahnkamen's grave was opened there were found many rare treasures, among which were perfumes and cold cream. It is a well-known fact that Egyptians not only used cold cream, but were accustomed to select the best possible cosmetics obtainable.

After many years of experimenting and testing various methods of making cold cream, the writer has arrived at a formula which embodies all the essentials necessary to manufacturing a smooth, pure white, velvety cold cream. This cream does not become rancid,

shrink or dry up, and will maintain its consistency as well during the hot months of summer as well as during the cold temperatures of winter. It is advisable to have the cream packed in airtight containers.

The cleansing properties of a cream are all important, but there must not be a stickiness to the cream; it should be suitable for the oily or dry type of skin.

With statisticians claiming that over 8,000,000 pounds of cold cream were sold in the United States during the year 1933, it would seem to the writer that all pharmacists should be able to make and sell a good cold cream.

The cream made from the following formula can be manufactured at a cost of from 7 to 15 cents per pound, depending upon the perfume which is used.(!) This cream will meet with the general approval of the public and has already proved its merit. Here is the formula—

NO. 1.

Anhydrous wool-fat	1⅞	oz. av.
Beeswax, sunbleached	7½	oz. av.
Parowax	15	oz. av.
Stearic Acid, Triple Pressed	30	oz. av.
Ceresin wax white	7½	oz. av.
Lt. Gravity Mineral Oil	105	oz. fluid

Melt altogether with slow heat not to exceed 130 degrees, Fahrenheit.

NO. 2.

Distilled Water	150	oz. fluid
Triethanolamine (Carbide-Carbon Chemical Corp., N. Y. C.)	45	dr. fluid
Glycerin	30	oz. fluid
Benzoate Soda C. P.	120	gr.

Make a solution and heat to 130 degrees, Fahrenheit.

Pour No. 1 into No. 2 and stir for 15 minutes; it is best to use a beater run with electric current. Add 1 fluid ounce of perfume oil and allow to stand at a temperature of 60 or 70 degrees Fahrenheit until cooled or allow to stand overnight.

The next step is to whip for at least 20 minutes. If you want to pour the cream heat slightly by water bath; pack cold by the use of a spatula and flame the tops.

Do not over-fill the jars or the cream will adhere to the top of the jar cover and liner and will destroy the appearance of the cream when first opened by the purchaser.

G. H. COPELAND.

Compound Bismuth Powder

Bismuth subcarbonate	25 gm.
Calcium carbonate (pptd.)	75 gm.
Heavy magnesium carbonate	75 gm.
Sodium bicarbonate	25 gm.

Mix thoroughly and dispense in 2 gm. (30 grain) powders.

Antiseptic Orvules

(Solvellæ Antisepticæ)

Effervescing Mouthwash Tablets

Sodium Bicarbonate	32.40 gm.	500 gr.
Borax, in powder	19.44 gm.	300 gr.
Sodium Benzoate, in powder	3.24 gm.	50 gr.
Boric Acid, in powder	3.24 gm.	50 gr.
Menthol	0.08 gm.	1¼ gr.
Oil of Eucalyptus	0.30 cc.	5 m.
Thymol	0.08 gm.	1¼ gr.
Oil of Lemon	0.30 cc.	5 m.
Tartaric Acid	25.92 gm.	400 gr.
Saccharin	0.06 gm.	1 gr.
Lactose	19.44 gm.	300 gr.
Eosin	0.10 gm.	1½ gr.
Solution of Carmine	7.10 cc.	2 fl. dr.
Distilled Water	7.10 cc.	2 fl. dr.

Dissolve the eosin in the distilled water and mix with the solution of carmine. Dry the tartaric acid and the lactose separately, by the application of heat; mix the dried powders, granulate with a sufficient quantity of the solution of eosin and carmine and dry the granules. Mix the saccharin, sodium bicarbonate, borax, and sodium benzoate with the remainder of the solution of eosin and carmine; granulate, dry the granules and mix them with the previously granulated tartaric acid and lactose. Mix the menthol, thymol, oil of eucalyptus and oil of lemon with the boric acid, mix with the granules and compress into 100 tablets.—(Proposed for the *British Pharm. Codex.*)

Incompatibilities

℞

Liquor Hyd. Perox. .....
Spt. Vini. Meth. ..... } of each, equal parts

This is a fairly frequent combination usually given as drops for acute osteomyelitis of the ears. The drops are often prescribed for long periods, and on standing the primary alcohol is oxidized by the peroxide in the presence of traces of metallic salts to the corresponding aldehyde and acid. This has been proved in the writer's experience by complaints from patients that drops which had been stored for a time gave rise to a scalding sensation when instilled into the ear. This matter has also been investigated from a chemical point of view by Rosenthaler (*Arch. d. Pharm.* 267, 599, 1929).

It is advisable to dispense the drops separately, labelling them A and B, five drops of each to be instilled into the ear as directed.

℞

Sodii Salicyl.	15 grains
Liq. Iodi. Comp.	7 minims
Aqua. Menth. Pip.	½ fl. oz.

Complaints were received from the patient that this mixture deposited on keeping. On examination a purplish flocculent precipitate was noticed after the mixture had been standing for four or five hours. The end products of the reaction between free iodine and salicylic acid vary with conditions of time and concentration, and the coloration was probably due to the formation of tetraiodo-diphenylene-quinone $(C_6H_2I_2O)_2$, this representing the end product of the reaction. Also there would probably be some free salicylic acid liberated from the excess salicylate by the hydriodic acid produced as a result of the displacement of hydrogen by iodine. The sodium salicylate was subsequently dispensed separately.

℞

Sod. Barbital.	2 grains
Chloral Hydrat.	3 grains
Aquam .....ad	1 fl. oz.

Chloral hydrate is incompatible with soluble barbital, liberating free diethylbarbituric acid which is only slightly soluble in water, and is saponified to choroform.

The latter would be detected in the mixture after standing by its odor. The doctor suggested the substitution of a five-grain dose of potassium bromide for the chloral hydrate. (*Phar. Jour. Lon.*)